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CLAIMS

[Claim(s)]

[Claim 1] When a printing control terminal performs printing processing using the data for printing received from the request terminal When there is a re-printing demand which extracted the page information which searches a newpage position from the data for printing, and shows the printing starting position of each page, saved the aforementioned page information with the data for the aforementioned printing after the printing processing end, and specified the page, The printing control method characterized by printing the page to which the saved data correspond with reference to the aforementioned page information.

[Claim 2] The printing control system characterized by providing the following. The spool file which stores the received data for printing in the printing control terminal which receives a printing request The spooler which generates the page information which searches a newpage position from the aforementioned data for printing, and shows the printing starting position of each page The permanent file which saves the data and the page information for the aforementioned printing after a printing processing end The printing processing section which prints the page to which the saved data correspond with reference to the aforementioned page information according to the re-printing demand which specified the page after printing processing

[Claim 3] It is the printing control system which carries out [having had the printing processing section which prints the page to which the saved data correspond with reference to the aforementioned page information according to the re-printing demand which specified the page after printing processing, after the spool file held the data and the page information for printing as it was in the claim 2 when printing was completed, and the printing control section ended printing, and] as the feature.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to the printing control method and printing control system which can perform a re-printing request easily about arbitrary pages, when printing is requested through communication lines, such as LAN (Local Area Network).

[0002]

[Description of the Prior Art] Between the terminal units mutually connected through a communication line like LAN, a certain terminal unit may request printing of a file etc. to other terminal units. In such a case, a request terminal transmits the data for printing to a printing control terminal. A printing control terminal stores the received data for printing in the spool file of a general-purpose operation system. Then, a printing control terminal outputs in order the data stored in the spool file to a printer, and performs printing control.

[0003]

[Problem(s) to be Solved by the Invention] By the way, there were the following technical problems which should be solved in the above printing control methods conventionally. After the printing control terminal which received the printing request sends out data required for a printer and ending printing, it eliminates the data stored in the spool file. Therefore, when a certain obstacle occurs during printing and all printings of a file are not completed, all data must be re-received anew and printing must be redone.

[0004] Moreover, when printing is completed normally, the print data in a spool file are eliminated immediately. When some output forms with which the user was printed are lost on the other hand or the part where printing concentration is inadequate is discovered in part, he may wish to print again about the portion. Also in this case, the data of the page which corresponds from a request terminal must be resent, and printing must be redone.

[0005] However, the procedure for the above re-printings is the same as the procedure which performs a printing request at the beginning, and needed various kinds of procedure which transmits the data for printing or specifies the page for printing, and the problem of it not only becoming a big burden, but having made the occupancy time of a communication line increasing in vain, and barring effective use of resources for an official in charge was.

[0006]

[Means for Solving the Problem] this invention adopts the next composition in order to solve the above point. The method of this invention extracts the page information which searches a newpage position from the data for printing, and shows the printing starting position of each page, when a printing control terminal performs printing processing using the data for printing received from the request terminal. Furthermore, it is characterized by printing the page to which the data which saved page information with the data for printing after the printing processing end, and were saved with reference to page information when there was a re-printing demand which specified the page correspond.

[0007] Moreover, the equipment of this invention searches a newpage position from the data for printing with the spool file which stores the received data for printing in the printing control terminal which receives a printing request, and is equipped with the spooler which generates the page information which shows the printing starting position of each page. Furthermore, it is characterized by having the printing processing section which prints the page to which the data saved with reference to page information according to the re-printing demand which specified the page after printing processing to be the permanent file which saves the data and the page information for printing after the printing processing end correspond.

[0008]

[Function] If the data for printing are received by the printing control terminal, reference of a newpage position will be first performed by the spooler. Printing data are stored in the data file of a spool file, and the page information which shows the printing starting position of each page is stored in a page management file. Referring to this spool file, the printing processing section controls a printer and performs printing. After a printing end is posted to a permanent file, and the content of this spool file is saved. If there is a re-printing request which specified the page, with reference to a page management file, the printing data which correspond from a data file will be read. It becomes unnecessary therefore, to send again the data for printing of the page which corresponds from a request terminal.

[0009]

[Example] Hereafter, this invention is explained in detail using the example of drawing. Drawing 1 is the block diagram showing the printing control-system example of this invention. In this system, the request terminal 10 is

connected with the printing control terminal 20 through the communication lines 1, such as LAN. In addition, in addition to this, many terminal units shall be connected to this communication line 1. Moreover, what has a printer among these terminal units functions as a printing control terminal as shown in this drawing. Therefore, the printing control terminal 20 may be a terminal only for printings, or may be a terminal which operates like the usual terminal and has a printing function further.

[0010] The re-printing utility 11, the request application 12, the page boundary reference processing section 13, and the general-purpose operation system 14 are formed in the request terminal 10. Moreover, a utility 21, the printing processing section 22, a spooler 23, the storage section 24, and the general-purpose operation system 29 are formed in the printing control terminal 20. The printing processing section 22 is a portion which controls the printer 3 connected to the printing control terminal 20. The spool file 25 and the permanent file 30 are stored in the storage section 24. The spool file 25 has the whole management file 26, the page management file 27, and the data file 28. The permanent file 30 has the whole management file 31, the page management file 32, and the data file 33.

[0011] Each block formed in the above-mentioned request terminal 10 and the printing control terminal 20 consists of a control program which has the fixed function explained later, respectively, and a circuit. The request application 12 of the request terminal 10 consists of application programs which draw up a document etc., generate the data for printing and perform a printing request to the printing control terminal 20. The general-purpose operation system 14 consists of operation systems (OS) of the various kinds known well which control operation of the request terminal 10. The page boundary reference processing section 13 is a portion which performs processing which searches the boundary which serves as a newpage from the data for printing, and inserts a page boundary identifier, as explained later using drawing 5. The re-printing utility 11 is a portion which performs processing which turns and outputs the re-printing request which specified the page about arbitrary pages based on the printing result to the printing control terminal 20 after a printing end.

[0012] The utility 21 of the printing control terminal 20 is the portion which manages the fixed function prepared in the printing control terminal 20, and has the function to transmit the re-printing demand by the re-printing utility 11 of the request terminal 10 to the printing processing section 22, in the equipment of this invention. The printing processing section 22 controls a printer 3, and performs printing control. A spooler 23 is a portion which performs processing which receives the data for printing from the page boundary reference processing section 13 of the request terminal 10, searches a page boundary identifier as explains later using drawing 6, and generates a spool file 25. A spool file 25 is a data file used when the printing processing section 22 performs the first printing. The whole management file 26 is a portion which stores the attribute information on the data for printing. The page management file 27 is a portion which stores the page information explained after the data for printing using drawing 3. A data file 33 is a portion which stores the printing data actually sent out towards a printer 3. A permanent file 30 consists of storage regions for copying a spool file 25 as it is just as it is, for example, and saving it during a fixed period. The general-purpose operation system 29 consists of operation systems which control operation of this printing control terminal 20 and which were known well conventionally.

[0013] Composition explanatory drawing of the received data which the printing control terminal 20 receives to drawing 2 is shown. The request application 12 of the request terminal 10 shown in drawing 1 generates the document file which, in addition to this, contains a character code and various kinds of control codes as data for printing. In this case, the page boundary reference processing section 13 detects the boundary used as the newpage contained in this, and inserts a page boundary identifier there. The received data 40 of the printing control terminal 20 shown in this drawing 2 are data generated as a result of such processing. That is, a header 41 is formed in the head portion of data, and the page boundary identifier 43 which shows the printing data 42 and a page boundary after that serves as a content arranged by turns. In the printing control system of the general former, it is collectively stored in a spool file 25 by these received data 40, and in the case of printing, it is outputted as it is and transmitted to a printer.

[0014] Example explanatory drawing of page information is shown in drawing 3. The spooler 23 shown in drawing 1 analyzes the received data 40 as shown in drawing 2, and extracts page information. The content turns into a content which shows from which position of the data for printing each page is started, as shown, for example in this drawing. For example, xx byte eye to the 2nd page [1st] page becomes the information on the content that the 3rd page is from OO byte eye from **** byte eye.

[0015] If a spooler 23 accepts the received data 40 shown in drawing 2 and such information searches and discovers the page boundary identifier 43, the following printing data will memorize from what byte it is started. This serves as page information and is stored in the page management file 27 shown in drawing 1. The above page information is unnecessary, when a printing request is received first, and printing is performed as it is, then printing is completed. Moreover, after ending printing, by the conventional printing control method of deleting the content of a spool file and extinguishing the received data, it is unnecessary information.

[0016] On the other hand, in the method of this invention, the content of a spool file 25 is stored in the permanent file 30 after the printing end. And when there is a re-printing request which specified the page from the exterior, the data which correspond immediately are read from a permanent file 30, and it sends to a printer 3, and enables it to perform printing processing. For this purpose, page information is beforehand generated so that the data of the corresponding page can be extracted easily, and it stores in the permanent file 30.

[0017] Processing explanatory drawing to a re-printing demand is shown in drawing 4. By the method of this invention, a re-printing processing demand is received in a mode as shown in this drawing. First, the example which carried out the similar copy of the data for printing, and saved them from the spool file 25 to the permanent file 30

at (a) is shown. When printing terminates normally, such preservation is performed, when there is re-printing demand 45, the data of the page which corresponds from a permanent file 30 are read, and printing processing is performed. [0018] Handling when printing is not completed normally is shown in (b). When printing is not completed normally, there are two kinds of methods of dealing with it. First, if printing is not completed normally, the content of a spool file 25 is left as it is, and the purport which printing terminated abnormally is notified to the request terminal 10. In this case, the printing control terminal 20 interrupts a receptionist and printing control of others of a printing request, and waits for directions of the request terminal 10. And if there is a re-printing request of page specification from the request terminal 10, with reference to the page management file 27 of the spool file 25 shown in drawing 1, the data which correspond from a data file 28 will be read, and re-printing processing will be performed.

[0019] It is also possible to store the content of a spool file 25 in the similar permanent file 30 completely like the case where it terminates normally on the other hand when printing terminates abnormally. In this case, the content of a spool file 25 is cleared and it becomes possible to receive and perform other printing processings etc. On the other hand, after abnormal termination, if there is re-printing demand 46, with reference to the page management file 32 stored in the permanent file 30, the data of the page which corresponds from a data file 33 will be taken out, and printing processing will be performed. This serves as the completely same procedure as the re-printing demand after normal termination.

[0020] The data for printing are stored and held at the storage section 24 of the printing control terminal 20, and the corresponding data can be taken out and printed about arbitrary pages according to page information until there is a re-printing request above in any case, after receiving a printing request. Therefore, it is not necessary to a re-printing demand to resend the data for printing from the request terminal 10.

[0021] The above-mentioned operation is concretely explained in order using a flow chart below. Drawing 5 shows the operation flow chart of the page boundary reference processing section 13 shown in drawing 1. First, in Step S1, the data for printing are received from the request application 12. Next, in Step S2, every one line of the data is searched and the boundary used as a newpage is searched. And in Step S3, if it is recognized as it being a newpage, it moves to Step S5 and a page boundary identifier is stored in a newpage position. After that, the candidate for a search is advanced to the following line (Step S6). When there is no boundary used as a newpage, as shown in step S4, it moves to the following line as it is. And in Step S7, processing of Step S2 - Step S6 is repeated until it is judged that it is the last line. After a search is completed to the last line, it moves to Step S8 and the data for printing are transmitted to the spooler 23 of the printing control terminal 20 through the communication lines 1, such as LAN.

[0022] Explanatory drawing of a spooler of operation is shown in drawing 6. First, in Step S1, a spooler 23 receives transfer data from the page boundary reference processing section 13. Next, in Step S2, the attribute of the printing data contained in the data for printing is written in the whole spool file 25 management file 26. And in Step S3, it analyzes printing data of one line at a time. Consequently, in step S4, when a page boundary identifier is detected, in Step S5, page information is written in the page management file 27. The content is as having been shown in drawing 3. Then, it progresses to the following line in Step S6, and processing of Step S3 - Step S6 is repeated until it is judged that it is the last line in Step S7. In this way, if all the page boundary identifiers contained in the data for printing are detected and required page information is stored in the page management file 27, it moves to Step S8 and the whole printing data is stored in a data file 28.

[0023] The printing processing flow chart in usual is shown in drawing 7. The printing control section 22 of the printing control terminal 20 performs printing processing according to a procedure as shown in this drawing. First, in Step S1, the attribute of printing data is read from a whole management file. And according to the content, data are read from the data file 28 of a spool file 25, and it outputs towards a printer 3. Then, in Step S3, it judges whether it is unusual whether a printing result is normal. Here, when a printing result is judged to be normal, it moves to step S4, and a spool file is saved at a permanent file 30. And in Step S6, the purport which printing terminated normally to the request terminal 10 is notified via a communication line 1. The request application 12 recognizes a printing end in response to this notice.

[0024] The purport which moved to Step S5 when a printing result was judged to be unusual, and was terminated abnormally in Step S3 on the other hand is notified to the request application 12. In addition, only when it terminates normally, it is made to save the content of a spool file 25 shown in drawing 1 like this flow chart in this example at a permanent file 30. This is for waiting for the re-printing request of the request application 12 etc., where the data for printing are held to a spool file 25, when it terminates abnormally.

[0025] The printing processing operation flow chart at the time of obstacle generating is shown in drawing 8. When an obstacle occurs, the printing processing section 22 performs printing processing in a procedure as shown in this drawing. First, in Step S1, the re-printing utility 11 of the request terminal 10 operates, and printing directions are sent in to the printing processing section 22 via a utility 21. Here, the content of the printing directions is judged in Step S2. When there are directions of the purport which stops printing, it moves to Step S3, and the content of a spool file 25 is deleted as it is, it moves to Step S10, and control is returned to a utility. And in Step S2, if the content of printing directions shows re-printing from a specification page, it will move to Step S5 and the page information on the resumption specification page of re-printing will be taken out from the page management file 27 of a spool file 25. And the printing data of the page which corresponds according to the page information are read from a data file 28. Then, the data is outputted to a printer (Step S7), and printing is performed.

[0026] Moreover, in Step S2, when directions of the purport re-printed from a head are received, all printing data

are unconditionally read from a data file 28 (Step S4). This printing data also progresses to Step S7, and is outputted to a printer. Then, in Step S8, when it is judged whether printing was completed normally and it ends normally, the contents of a spool file 25 are stored in a permanent file 30 like Step S4 of drawing 7 (Step S9). And it moves to Step S10 and control is returned to a utility.

[0027] Drawing 9 shows the permanent-file re-printing processing operation flow chart after normal termination. When received printing is completed normally seemingly, re-printing control is performed according to a procedure as shown in this drawing. First, in Step S1, the re-printing utility 11 of the request terminal 10 performs printing request directions through the utility 21 of the printing control terminal 20. In this case, it moves from Step S1 to Step S2, and the contents of request directions are judged. If the contents of request directions are re-printing from a specification page, it will move to Step S3 and the page information on the resumption specification page of re-printing will be read from the page management file 32 of a permanent file 30. And it moves to Step S4, the printing data which correspond from the data file 33 of a permanent file 30 are read, and it outputs to a printer 3 in Step S6. After that, in Step S7, control is returned to a utility.

[0028] The re-printing request operation flow chart by the utility at the time of obstacle generating is shown in drawing 10. In the re-printing utility 11 side, request operation as shown in this drawing is performed. That is, in Step S1, directions of whether after obstacle generating stops the printing processing, or specifies a page, and requests re-printing or to perform re-printing anew from a head are chosen, and a request is outputted. The request is sent to the printing control terminal 20, and processing returns from the printing control terminal 20 according to the procedure already explained that printing processing is completed (Step S2). Here, in Step S3, it is judged whether it is normal, if not normal, it will be judged in Step S4 whether a re-printing request is performed again, and in carrying out a re-printing request, it returns to Step S1. Moreover, in stopping printing, it moves to Step S5, and a printing processing stop is requested from the printing control terminal 20.

[0029] The operation flow chart of the utility in the case of the permanent-file re-printing request after normal termination is shown in drawing 11. If there is a printing poor portion after normal termination, directions of whether the re-printing utility 11 performs re-printing of page specification to the printing control terminal 20 or to perform re-printing from a head will be chosen, and a directions request will be issued. And in Step S2, if printing control of the printing control terminal 20 is completed and control returns, in Step S3, it will judge whether processing was completed normally. In performing a retry, it returns from Step S4 to Step S1 completely like what was shown in drawing 10. Moreover, when a retry is unnecessary, it progresses to Step S5, and the stop of printing is requested. If it has ended normally, operation of a utility will be ended as it is.

[0030] The printing control method of this invention is not limited to the above example. As long as it seems that the contents of printed information can extract the data of the corresponding page when there is a re-printing request from the data for printing substantially, they may be the things of what form and the contents. Moreover, as explained previously, even if the re-printing demand after abnormal termination refers to a spool file, once it does not interfere even if it enables it to refer to a permanent file and it stores it in a permanent file altogether, a spool file has the advantage that it can be freely used for a new printing demand etc.

[0031] Moreover, it is necessary to save no data for printing as they are at a permanent file. That is, it is desirable to prepare a utility which eliminates in order data without a possibility that a re-printing request may already occur to suitable timing.

[0032]

[Effect of the Invention] According to the printing control method and printing control system of this invention which were explained above When a printing control terminal performs printing processing using the data for printing received at the request terminal, a newpage position is searched from the data for printing. When there is a re-printing demand which extracted the page information which shows the printing starting position of each page, saved with the data for printing after the printing processing end, and specified the page, Since the page to which the saved data correspond was printed with reference to page information, it becomes unnecessary to send the data for printing again to a printing control terminal. Therefore, request application is again started for re-printing, the procedure of performing a printing request is skipped, and re-printing is attained only by taking out the printing request which specified the page from a utility. For this reason, time to transmit the warm-up time of request application and the data for printing etc. can be saved, and the processing time for re-printing is shortened. Moreover, there is an effect which mitigates the traffic of the communication line which connects a request terminal and a printing control terminal.

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TECHNICAL FIELD

[Industrial Application] this invention relates to the printing control method and printing control system which can perform a re-printing request easily about arbitrary pages, when printing is requested through communication lines, such as LAN (Local Area Network).

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PRIOR ART

[Description of the Prior Art] Between the terminal units mutually connected through a communication line like LAN, a certain terminal unit may request printing of a file etc. to other terminal units. In such a case, a request terminal transmits the data for printing to a printing control terminal. A printing control terminal stores the received data for printing in the spool file of a general-purpose operation system. Then, a printing control terminal outputs in order the data stored in the spool file to a printer, and performs printing control.

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EFFECT OF THE INVENTION

[Effect of the Invention] When a printing control terminal performs printing processing using the data for printing received at the request terminal according to the printing control method and printing control system of this invention which were explained above, a newpage position is searched from the data for printing. Since the page to which the data which extracted the page information which shows the printing starting position of each page, saved with the data for printing after the printing processing end, and were saved with reference to page information when there was a re-printing demand which specified the page correspond was printed, it becomes unnecessary to send the data for printing again to a printing control terminal. Therefore, request application is again started for re-printing, the procedure of performing a printing request is skipped, and re-printing is attained only by taking out the printing request which specified the page from a utility. For this reason, time to transmit the warm-up time of request application and the data for printing etc. can be saved, and the processing time for re-printing is shortened. Moreover, there is an effect which mitigates the traffic of the communication line which connects a request terminal and a printing control terminal.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] By the way, there were the following technical problems which should be solved in the above printing control methods conventionally. After the printing control terminal which received the printing request sends out data required for a printer and ending printing, it eliminates the data stored in the spool file. Therefore, when a certain obstacle occurs during printing and all printings of a file are not completed, all data must be re-received anew and printing must be redone.

[0004] Moreover, when printing is completed normally, the print data in a spool file are eliminated immediately. When some output forms with which the user was printed are lost on the other hand or the part where printing concentration is inadequate is discovered in part, he may wish to print again about the portion. Also in this case, the data of the page which corresponds from a request terminal must be resent, and printing must be redone.

[0005] However, the procedure for the above re-printings is the same as the procedure which performs a printing request at the beginning, and needed various kinds of procedure which transmits the data for printing or specifies the page for printing, and the problem of it not only becoming a big burden, but having made the occupancy time of a communication line increasing in vain, and barring effective use of resources for an official in charge was.

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MEANS

[Means for Solving the Problem] this invention adopts the next composition in order to solve the above point. The method of this invention extracts the page information which searches a newpage position from the data for printing, and shows the printing starting position of each page, when a printing control terminal performs printing processing using the data for printing received from the request terminal. Furthermore, it is characterized by printing the page to which the data which saved page information with the data for printing after the printing processing end, and were saved with reference to page information when there was a re-printing demand which specified the page correspond.

[0007] Moreover, the equipment of this invention searches a newpage position from the data for printing with the spool file which stores the received data for printing in the printing control terminal which receives a printing request, and is equipped with the spooler which generates the page information which shows the printing starting position of each page. Furthermore, it is characterized by having the printing processing section which prints the page to which the data saved with reference to page information according to the re-printing demand which specified the page after printing processing to be the permanent file which saves the data and the page information for printing after the printing processing end correspond.

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OPERATION

[Function] If the data for printing are received by the printing control terminal, reference of a newpage position will be first performed by the spooler. Printing data are stored in the data file of a spool file, and the page information which shows the printing starting position of each page is stored in a page management file. Referring to this spool file, the printing processing section controls a printer and performs printing. After a printing end is posted to a permanent file, and the content of this spool file is saved. If there is a re-printing request which specified the page, with reference to a page management file, the printing data which correspond from a data file will be read. It becomes unnecessary therefore, to send again the data for printing of the page which corresponds from a request terminal.

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EXAMPLE

[Example] Hereafter, this invention is explained in detail using the example of drawing. Drawing 1 is the block diagram showing the printing control-system example of this invention. In this system, the request terminal 10 is connected with the printing control terminal 20 through the communication lines 1, such as LAN. In addition, in addition to this, many terminal units shall be connected to this communication line 1. Moreover, what has a printer among these terminal units functions as a printing control terminal as shown in this drawing. Therefore, the printing control terminal 20 may be a terminal only for printings, or may be a terminal which operates like the usual terminal and has a printing function further.

[0010] The re-printing utility 11, the request application 12, the page boundary reference processing section 13, and the general-purpose operation system 14 are formed in the request terminal 10. Moreover, a utility 21, the printing processing section 22, a spooler 23, the storage section 24, and the general-purpose operation system 29 are formed in the printing control terminal 20. The printing processing section 22 is a portion which controls the printer 3 connected to the printing control terminal 20. The spool file 25 and the permanent file 30 are stored in the storage section 24. The spool file 25 has the whole management file 26, the page management file 27, and the data file 28. The permanent file 30 has the whole management file 31, the page management file 32, and the data file 33.

[0011] Each block formed in the above-mentioned request terminal 10 and the printing control terminal 20 consists of a control program which has the fixed function explained later, respectively, and a circuit. The request application 12 of the request terminal 10 consists of application programs which draw up a document etc., generate the data for printing and perform a printing request to the printing control terminal 20. The general-purpose operation system 14 consists of operation systems (OS) of the various kinds known well which control operation of the request terminal 10. The page boundary reference processing section 13 is a portion which performs processing which searches the boundary which serves as a newpage from the data for printing, and inserts a page boundary identifier, as explained later using drawing 5. The re-printing utility 11 is a portion which performs processing which turns and outputs the re-printing request which specified the page about arbitrary pages based on the printing result to the printing control terminal 20 after a printing end.

[0012] The utility 21 of the printing control terminal 20 is the portion which manages the fixed function prepared in the printing control terminal 20, and has the function to transmit the re-printing demand by the re-printing utility 11 of the request terminal 10 to the printing processing section 22, in the equipment of this invention. The printing processing section 22 controls a printer 3, and performs printing control. A spooler 23 is a portion which performs processing which receives the data for printing from the page boundary reference processing section 13 of the request terminal 10, searches a page boundary identifier as explains later using drawing 6, and generates a spool file 25. A spool file 25 is a data file used when the printing processing section 22 performs the first printing. The whole management file 26 is a portion which stores the attribute information on the data for printing. The page management file 27 is a portion which stores the page information explained after the data for printing using drawing 3. A data file 33 is a portion which stores the printing data actually sent out towards a printer 3. A permanent file 30 consists of storage regions for copying a spool file 25 as it is just as it is, for example, and saving it during a fixed period. The general-purpose operation system 29 consists of operation systems which control operation of this printing control terminal 20 and which were known well conventionally.

[0013] Composition explanatory drawing of the received data which the printing control terminal 20 receives to drawing 2 is shown. The request application 12 of the request terminal 10 shown in drawing 1 generates the document file which, in addition to this, contains a character code and various kinds of control codes as data for printing. In this case, the page boundary reference processing section 13 detects the boundary used as the newpage contained in this, and inserts a page boundary identifier there. The received data 40 of the printing control terminal 20 shown in this drawing 2 are data generated as a result of such processing. That is, a header 41 is formed in the head portion of data, and the page boundary identifier 43 which shows the printing data 42 and a page boundary after that serves as a content arranged by turns. In the printing control system of the general former, it is collectively stored in a spool file 25 by these received data 40, and in the case of printing, it is outputted as it is and transmitted to a printer.

[0014] Example explanatory drawing of page information is shown in drawing 3. The spooler 23 shown in drawing 1 analyzes the received data 40 as shown in drawing 2, and extracts page information. The content turns into a content which shows from which position of the data for printing each page is started, as shown, for example in this drawing. For example, xx byte eye to the 2nd page [1st] page becomes the information on the content that the 3rd page is from OO byte eye from **** byte eye.

[0015] If a spooler 23 accepts the received data 40 shown in drawing 2 and such information searches and discovers the page boundary identifier 43, the following printing data will memorize from what byte it is started. This serves as page information and is stored in the page management file 27 shown in drawing 1. The above page information is unnecessary, when a printing request is received first, and printing is performed as it is, then printing is completed. Moreover, after ending printing, by the conventional printing control method of deleting the content of a spool file and extinguishing the received data, it is unnecessary information.

[0016] On the other hand, in the method of this invention, the contents of a spool file 25 are stored in the permanent file 30 after the printing end. And when there is a re-printing request which specified the page from the exterior, the data which correspond immediately are read from a permanent file 30, and it sends to a printer 3, and enables it to perform printing processing. For this purpose, page information is beforehand generated so that the data of the corresponding page can be extracted easily, and it stores in the permanent file 30.

[0017] Processing explanatory drawing to a re-printing demand is shown in drawing 4. By the method of this invention, a re-printing processing demand is received in a mode, as shown in this drawing. First, the example which carried out the similar copy of the data for printing, and saved them from the spool file 25 to the permanent file 30 at (a) is shown. When printing terminates normally, such preservation is performed, when there is re-printing demand 45, the data of the page which corresponds from a permanent file 30 are read, and printing processing is performed.

[0018] Handling when printing is not completed normally is shown in (b). When printing is not completed normally, there are two kinds of methods of dealing with it. First, if printing is not completed normally, the content of a spool file 25 is left as it is, and the purport which printing terminated abnormally is notified to the request terminal 10. In this case, the printing control terminal 20 interrupts a receptionist and printing control of others of a printing request, and waits for directions of the request terminal 10. And if there is a re-printing request of page specification from the request terminal 10, with reference to the page management file 27 of the spool file 25 shown in drawing 1, the data which correspond from a data file 28 will be read, and re-printing processing will be performed.

[0019] It is also possible to store the content of a spool file 25 in the similar permanent file 30 completely like the case where it terminates normally on the other hand when printing terminates abnormally. In this case, the content of a spool file 25 is cleared and it becomes possible to receive and perform other printing processings etc. On the other hand, after abnormal termination, if there is re-printing demand 46, with reference to the page management file 32 stored in the permanent file 30, the data of the page which corresponds from a data file 33 will be taken out, and printing processing will be performed. This serves as the completely same procedure as the re-printing demand after normal termination.

[0020] The data for printing are stored and held at the storage section 24 of the printing control terminal 20, and the corresponding data can be taken out and printed about arbitrary pages according to page information until there is a re-printing request above in any case, after receiving a printing request. Therefore, it is not necessary to a re-printing demand to resend the data for printing from the request terminal 10.

[0021] The above-mentioned operation is concretely explained in order using a flow chart below. Drawing 5 shows the operation flow chart of the page boundary reference processing section 13 shown in drawing 1. First, in Step S1, the data for printing are received from the request application 12. Next, in Step S2, every one line of the data is searched and the boundary used as a newpage is searched. And in Step S3, if it is recognized as it being a newpage, it moves to Step S5 and a page boundary identifier is stored in a newpage position. After that, the candidate for a search is advanced to the following line (Step S6). When there is no boundary used as a newpage, as shown in step S4, it moves to the following line as it is. And in Step S7, processing of Step S2 – Step S6 is repeated until it is judged that it is the last line. After a search is completed to the last line, it moves to Step S8 and the data for printing are transmitted to the spooler 23 of the printing control terminal 20 through the communication lines 1, such as LAN.

[0022] Explanatory drawing of a spooler of operation is shown in drawing 6. First, in Step S1, a spooler 23 receives transfer data from the page boundary reference processing section 13. Next, in Step S2, the attribute of the printing data contained in the data for printing is written in the whole spool file 25 management file 26. And in Step S3, it analyzes printing data of one line at a time. Consequently, in step S4, when a page boundary identifier is detected, in Step S5, page information is written in the page management file 27. The content is as having been shown in drawing 3. Then, it progresses to the following line in Step S6, and processing of Step S3 – Step S6 is repeated until it is judged that it is the last line in Step S7. In this way, if all the page boundary identifiers contained in the data for printing are detected and required page information is stored in the page management file 27, it moves to Step S8 and the whole printing data is stored in a data file 28.

[0023] The printing processing flow chart in usual is shown in drawing 7. The printing control section 22 of the printing control terminal 20 performs printing processing according to a procedure as shown in this drawing. First, in Step S1, the attribute of printing data is read from a whole management file. And according to the content, data are read from the data file 28 of a spool file 25, and it outputs towards a printer 3. Then, in Step S3, it judges whether it is unusual whether a printing result is normal. Here, when a printing result is judged to be normal, it moves to step S4, and a spool file is saved at a permanent file 30. And in Step S6, the purport which printing terminated normally to the request terminal 10 is notified via a communication line 1. The request application 12 recognizes a printing end in response to this notice.

[0024] The purport which moved to Step S5 when a printing result was judged to be unusual, and was terminated abnormally in Step S3 on the other hand is notified to the request application 12. In addition, only when it terminates

normally, it is made to save the content of a spool file 25 shown in drawing 1 like this flow chart in this example at a permanent file 30. This is for waiting for the re-printing request of the request application 12 etc., where the data for printing are held to a spool file 25, when it terminates abnormally.

[0025] The printing processing operation flow chart at the time of obstacle generating is shown in drawing 8. When an obstacle occurs, the printing processing section 22 performs printing processing in a procedure as shown in this drawing. First, in Step S1, the re-printing utility 11 of the request terminal 10 operates, and printing directions are sent in to the printing processing section 22 via a utility 21. Here, the content of the printing directions is judged in Step S2. When there are directions of the purport which stops printing, it moves to Step S3, and the content of a spool file 25 is deleted as it is, it moves to Step S10, and control is returned to a utility. And in Step S2, if the content of printing directions shows re-printing from a specification page, it will move to Step S5 and the page information on the resumption specification page of re-printing will be taken out from the page management file 27 of a spool file 25. And the printing data of the page which corresponds according to the page information are read from a data file 28. Then, the data is outputted to a printer (Step S7), and printing is performed.

[0026] Moreover, in Step S2, when directions of the purport re-printed from a head are received, all printing data are unconditionally read from a data file 28 (step S4). This printing data also progresses to Step S7, and is outputted to a printer. Then, in Step S8, when it is judged whether printing was completed normally and it ends normally, the content of a spool file 25 is stored in a permanent file 30 like step S4 of drawing 7 (step S9). And it moves to Step S10 and control is returned to a utility.

[0027] Drawing 9 shows the permanent-file re-printing processing operation flow chart after normal termination. When received printing is completed normally seemingly, re-printing control is performed according to a procedure as shown in this drawing. First, in Step S1, the re-printing utility 11 of the request terminal 10 performs printing request directions through the utility 21 of the printing control terminal 20. In this case, it moves from Step S1 to Step S2, and the content of request directions is judged. If the content of request directions is re-printing from a specification page, it will move to Step S3 and the page information on the resumption specification page of re-printing will be read from the page management file 32 of a permanent file 30. And it moves to step S4, the printing data which correspond from the data file 33 of a permanent file 30 are read, and it outputs to a printer 3 in Step S6. After that, in Step S7, control is returned to a utility.

[0028] The re-printing request operation flow chart by the utility at the time of obstacle generating is shown in drawing 10. In the re-printing utility 11 side, request operation as shown in this drawing is performed. That is, in Step S1, directions of whether after obstacle generating stops the printing processing, or specifies a page, and requests re-printing or to perform re-printing anew from a head are chosen, and a request is outputted. The request is sent to the printing control terminal 20, and processing returns from the printing control terminal 20 according to the procedure already explained that printing processing is completed (Step S2). Here, in Step S3, it is judged whether it is normal, if not normal, it will be judged in step S4 whether a re-printing request is performed again, and in carrying out a re-printing request, it returns to Step S1. Moreover, in stopping printing, it moves to Step S5, and a printing processing stop is requested from the printing control terminal 20.

[0029] The operation flow chart of the utility in the case of the permanent-file re-printing request after normal termination is shown in drawing 11. If there is a printing poor portion after normal termination, directions of whether the re-printing utility 11 performs re-printing of page specification to the printing control terminal 20 or to perform re-printing from a head will be chosen, and a directions request will be issued. And in Step S2, if printing control of the printing control terminal 20 is completed and control returns, in Step S3, it will judge whether processing was completed normally. In performing a retry, it returns from step S4 to Step S1 completely like what was shown in drawing 10. Moreover, when a retry is unnecessary, it progresses to Step S5, and the stop of printing is requested. If it has ended normally, operation of a utility will be ended as it is.

[0030] The printing control method of this invention is not limited to the above example. As long as it seems that the content of printed information can extract the data of the corresponding page when there is a re-printing request from the data for printing substantially, it may be the thing of what form and the content. Moreover, as explained previously, even if the re-printing demand after abnormal termination refers to a spool file, once it does not interfere even if it enables it to refer to a permanent file and it stores it in a permanent file altogether, a spool file has the advantage that it can be freely used for a new printing demand etc.

[0031] Moreover, it is necessary to save no data for printing as they are at a permanent file. That is, it is desirable to prepare a utility which eliminates in order data without a possibility that a re-printing request may already occur to suitable timing.

[Translation done.]

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- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.*** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the printing control-system example of this invention.

[Drawing 2] It is received-data composition explanatory drawing.

[Drawing 3] It is example explanatory drawing of page information.

[Drawing 4] It is processing explanatory drawing to a re-printing demand.

[Drawing 5] It is a page boundary reference processing operation flow chart.

[Drawing 6] It is the operation flow chart of a spooler.

[Drawing 7] Usually, it is a printing processing operation flow chart.

[Drawing 8] It is a printing processing operation flow chart at the time of obstacle generating.

[Drawing 9] It is a permanent-file re-printing processing operation flow chart after normal termination.

[Drawing 10] It is a re-printing request flow chart at the time of obstacle generating.

[Drawing 11] It is a permanent-file re-printing request flow chart after normal termination.

[Description of Notations]

3 Printer

10 Request Terminal

11 Re-Printing Utility

12 Request Application

13 Page Boundary Reference Processing Section

20 Printing Control Terminal

22 Printing Processing Section

23 Spooler

24 Storage Section

25 Spool File

30 Permanent File

[Translation done.]

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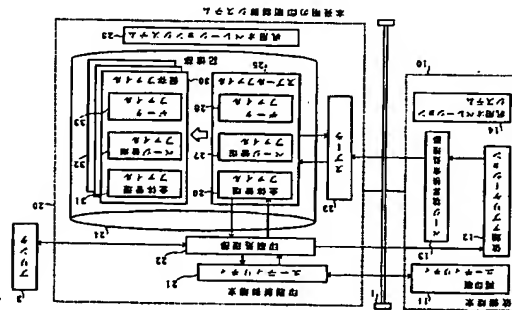
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(54) 発明の名称 印刷制御方法及び印刷制御システム

(57) 【要約】

【目的】 印刷制御端末が収容を受けた印刷の終了後、再印刷依頼があったときの処理を容易にする。

【構成】 印刷用のデータが印刷制御端末20に受信されると、まずスプール23により改ページ位置の検出が行われる。スプールファイル25のデータファイル28には印字データの格納され、ページ管理情報が格納される。印刷制御部22はこのスプールファイル25を参照しながらプリンタ3を制御し印刷を実行する。このスプールファイル25の内容は印刷終了後も保存ファイル30に転記され保存される。ページを指定した再印刷依頼があると、ページ管理ファイル32を参照し、データファイル33から該当する印字データを読み出す。従って、依頼端末10から該当するページの印刷用データを受け、依頼端末10から該当するページの印刷用データを再び送る必要はなくなる。



【特許請求の範囲】

【請求項1】 依頼端末より受信した印刷用のデータを用いて印刷制御端末が印刷処理を実行する場合に、印刷用のデータから改ページ位置を検索して各ページの印刷開始位置を示すページ情報を抽出し、

印刷処理終了後に前記ページ情報を前記印刷用のデータと共に保存して、ページを指定した再印刷依頼があったとき、前記ページ情報を参照して、保持したデータに該当するページを印刷することを特徴とする印刷制御方法。

【請求項2】 印刷依頼を受ける印刷制御端末に、受信した印刷用のデータを格納するスプールファイルと、前記印刷用データから改ページ位置を検索して、各ページの印刷開始位置を示すページ情報を生成するスプーラと、

印刷処理終了後に前記印刷用のデータとページ情報とを保存する保存ファイルと、印刷処理後のページを指定した再印刷依頼に応じて、前記ページ情報を参照して、保持したデータの該当するページを印刷する印刷制御部とを備えたことを特徴とする印刷制御システム。

【請求項3】 請求項2において、スプールファイルは、印刷が終了した場合に印刷用のデータとページ情報とをそのまま保持し、印刷制御部は、

印刷を終了した後、印刷処理後のページを指定した再印刷依頼に応じて、前記ページ情報を参照して、保持したデータの該当するページを印刷する印刷制御部とを備えたことを特徴とする印刷制御システム。

【発明の詳細な説明】

【0001】 【産業上の利用分野】 本発明は、LAN（ローカルエリアネットワーク）等の通信回線を通じて印刷を依頼したときに、任意のページについて再印刷依頼を容易に行うことができる印刷制御方法及び印刷制御システムに関する。

【0002】 【従来の技術】 LANのような通信回線を通じて相互に接続された端末装置の間で、ある端末装置が他の端末装置に対しファイルの印刷等を依頼することがある。この場合、依頼端末が印刷制御端末に対し印刷用のデータを送付する。印刷制御端末は受信した印刷用のデータを汎用オペレーティングシステムのスプールファイルに格納する。その後、印刷制御端末はスプールファイルに格納されたデータをプリンタへ順に出力し印刷制御を行う。

【0003】 【発明が解決しようとする課題】 ところで、上記のような印刷制御方法には、従来、次のような解決すべき課題があった。印刷依頼を受けた印刷制御端末はプリンタに必要なデータを送り出し、印刷を終了するとスプールフ

ファイルに格納されたデータを消去する。従って、印刷中に何らかの障害が発生し、ファイルの全ての印刷が終了しなかった場合には、改めて全てのデータを再受信し、印刷をやり直さなければならぬ。

【0004】 また、印刷が正常に終了した場合に、スプールファイルの中の印刷用データは直ちに消去される。一方、利用者が印刷された出力用紙の一部を紛失したり、あるいは一部に印字濃度が不十分な箇所を発見したような場合、その部分について再度印刷を希望することがある。このような場合には依頼端末から該当するページのデータを再送し、印刷をやり直さなければならぬ。

【0005】 しかしながら、上記のような再印刷のため手続きは当初印刷依頼を行う手続きと同様であり、印刷のデータを送信したり、印刷用のページを指定したりする各種の手続きを必要とし、係員にとって大きな負担となるばかりでなく通信回線の占有時間をいかに増加させ資源の有効活用を妨げるという問題があった。

【0006】

【課題を解決するための手段】 本発明は以上の点を解決するため次の構成を採用する。本発明の方法は、依頼端末より受信した印刷用のデータを用いて印刷制御端末が印刷処理を実行する場合に、印刷用のデータから改ページ位置を検索して各ページの印刷開始位置を示すページ情報を抽出し、更に、印刷処理終了後にページ情報を印刷用のデータと共に保存して、ページを指定した再印刷依頼があったとき、ページ情報を参照して、保持したデータの該当するページを印刷することを特徴とする。

【0007】 また、本発明の装置は、印刷依頼を受ける印刷制御端末に、受信した印刷用のデータを格納するスプールファイルと、印刷用データから改ページ位置を検索して、各ページの印刷開始位置を示すページ情報を生成するスプーラを備える。更に、印刷処理終了後に印刷用のデータとページ情報とを保存する保存ファイルと、印刷処理後のページを指定した再印刷依頼に応じて、ページ情報を参照して、保持したデータの該当するページを印刷する印刷制御部とを備えたことを特徴とする。

【0008】

【作用】 印刷用のデータが印刷制御端末に受信されると、まずスプーラにより改ページ位置の検索が行われ、スプールファイルのデータファイルには印字データが格納され、ページ管理ファイルには各ページの印刷開始位置を示すページ情報が格納される。印刷制御部はこのスプールファイル参照しながらプリンタを制御し印刷を実行する。このスプールファイルの内容は印刷終了後も保存ファイルに転記され保存される。ページを指定した再印刷依頼があると、ページ管理ファイルを参照し、データファイルから該当する印字データを読み出す。従って、依頼端末から該当するページの印刷用データを受け、依頼端末から該当するページの印刷用データを再び送る必要はなくなる。

ファイル30から読み出してプリンタ3に送り、印刷処理を実行できるようにしている。この目的のために、該当するページのデータを容易に抽出できるようにページ情報を含め、保存ファイル30に格納しておく。

【0017】図4には、再印刷要求に対する処理説明図を示す。本発明の方法では、この図に示すような態様で再印刷処理要求を受け付ける。まず、(a)には、スプールファイル25から保存ファイル30に対し印刷用のデータをすべてコピーし保存した例を示す。印刷が正常終了した場合、このような保存が行われ、再印刷要求45があった場合、保存ファイル30から該当するページのデータを読み出し、印刷処理が実行される。

【0018】(b)には、印刷が正常に終了しなかった場合の取扱いを示している。印刷が正常に終了しなかった場合には2通りの取扱い方法がある。まず、印刷が正常に終了しなかった場合はスプールファイル25の内容をそのままにして、印刷が異常終了した旨を依頼端末10に通知する。この場合、印刷制御端末20は他の印刷依頼の受付や印刷制御を中断し、依頼端末10の指示を待つ。そして、依頼端末10からページ指定の再印刷依頼があれば、図1に示したスプールファイル25のページ管理ファイル27を参照し、データファイル28から該当するデータを呼び出して再印刷処理を実行する。

【0019】一方、印刷が異常終了した場合にも正常終了した場合と全く同様にスプールファイル25の内容をそのままにして、印刷が正常に終了した旨を依頼端末10から呼び出して再印刷処理を実行する。この場合には、スプールファイル25の内容はクリアされ、他の印刷依頼等を受け付け実行することが可能となる。一方、異常終了後、再印刷要求46があれば保存ファイル30に格納されたページ管理ファイル32を参照し、データファイル33から該当するページのデータを呼び出し、印刷処理を実行する。これは正常終了後の再印刷要求と全く同一の手順となる。

【0020】以上いずれの場合にも、印刷依頼を受けた後再印刷依頼があるまで、印刷制御端末20の記憶部24に印刷用のデータが格納され保持されて、ページ情報に基いて任意のページについてその該当するデータを取得し、印刷することができ、従って、再印刷要求に対し、印刷用のデータを依頼端末10から再送する必要はない。

【0021】上記の動作を以下フローチャートを用いて具体的に順に説明する。図5は、図1に示すページ境界処理部13の動作フローチャートを示す。まず、ステップS1において、依頼アプリケーション12から印刷用のデータを受け取る。次に、ステップS2においてそのデータを1行ずつサーチし、改ページとなる境界を検索する。そして、ステップS3において、改ページ位置であると認識するとステップS5に移り、改ページ位置にページ境界識別子を格納する。その後は、次の行へサーチ対象を進める(ステップS6)。改ページとなる

25を生成する処理を行う部分である。スプールファイル25は印刷処理部22が最初の印刷を実行する場合に利用するデータファイルである。全体管理ファイル26は印刷用のデータの属性情報を格納する部分である。ページ管理ファイル27は印刷用のデータの、後で図3を用いて説明するページ情報を格納する部分である。データファイル33は実際にプリンタ3に向けて送り出される印刷用データ等を含めた改ページとなる境界を検出し、その中に含まれた改ページとなる境界を検出し、そこにページ境界識別子を挿入する。この図2に示した印刷制御端末20の動作を制御する従来のオペレーションシステムでは、再印刷制御端末20の受信する受信データの構成説明図を示す。図1に示した依頼端末10の依頼アプリケーション12は、文字コードやその他の種の制御コードを含む文書ファイル等を印刷用のデータとして生成する。この場合には、ページ境界処理部13はこの中に含まれた改ページとなる境界を検出し、そこにページ境界識別子を挿入する。この図2に示した印刷制御端末20の受信データ40は、そのような処理の結果生成されたデータである。即ち、データの先頭部分にはヘッダ41が設けられ、その後には印刷制御システムでは、ページ境界を示すページ境界識別子43とが交互に配置された内容となる。従来、従来の印刷制御システムでは、受信データ40が一括してスプールファイル25に格納され、印刷の際、そのまま出力されてプリンタに転送される。

【0014】図3に、ページ情報の例説明図を示す。図1に示したスプール23は、図2に示したような受信データ40を解析し、ページ情報を抽出する。その内容は、例えばこの図に示すように、各ページの印刷用のデータのどの位置から開始するかを示す内容となる。例えば、第1ページは×××バイト目から、第2ページは△△バイト目から、第3ページは○○○バイト目からといった内容の情報となる。

【0015】このように情報はスプール23が図2に示す受信データ40を受け入れ、ページ境界識別子43を検索して発見すると、その次の印刷用データが何バイト目から開始するかを記憶する。これがページ情報となつて図1に示すページ管理情報を記憶する。これによって図1に示すページ情報は、最初に印刷依頼を受けたそのまま印刷を実行し、それで印刷が完了する場合には不要である。また、印刷を終了した後、スプールファイルの内容を削除し、受信したデータを消滅させてしまう従来の印刷制御方法では不要な情報である。

【0016】一方、本発明の方法においては、スプールファイル25の内容を印刷終了後、保存ファイル30に格納しておく。そして、外部からページを指定した再印刷依頼があった場合に、直ちに該当するデータを保存フ

【0009】以下、本発明を図の実施例を用いて詳細に説明する。図1は、本発明の印刷制御システム構成を示すブロック図である。このシステムでは、依頼端末10がLAN等の通信回線1を介して印刷制御端末2と接続されている。なお、この通信回線1には多数の端末装置が接続されているものとす。また、この図に示すような印刷制御端末2として機能する。従って、印刷制御端末20は印刷専用端末であつてもよい、あるいは通常の端末と同様に動作し、更に印刷機能を持つような端末であつてもよい。

【0010】依頼端末10には、再印刷ユーティリティ11、依頼アプリケーション12、ページ境界処理部13及び印刷オペレーションシステム14が設けられている。また、印刷制御端末20には、ユーティリティ21、印刷処理部22、スプール23、記憶部24及び印刷オペレーションシステム29が設けられている。印刷制御部22は印刷制御端末20に接続されたプリンタ3を制御する部分である。記憶部24には、スプールファイル25と保存ファイル30が格納されている。スプールファイル27は全体管理ファイル26とページ管理ファイル27と、データファイル28を有している。保存ファイル30は全体管理ファイル31と、ページ管理ファイル32と、データファイル33を有している。

【0011】上記依頼端末10と印刷制御端末20に設けられた各ブロックは、それぞれ後で説明する一定の機能を有する制御プログラムや回路から構成される。依頼端末10の依頼アプリケーション12は、文書等を作成し印刷用のデータを生成して印刷制御端末20に印刷依頼を行うアプリケーションプログラム等から構成される。印刷オペレーションシステム14は、依頼端末10の動作を制御するよく知られた各種のオペレーションシステム(OS)から構成される。ページ境界処理部13は、後で図5を用いて説明するように、印刷用のデータを改ページとなる境界を検索してページ境界識別子を挿入する処理を実行する部分である。再印刷ユーティリティ11は、印刷終了後、その印刷結果に基づいて任意のページについてそのページを指定した再印刷依頼を印刷制御端末20に向けて出力する処理を行う部分である。

【0012】印刷制御端末20のユーティリティ21は、印刷制御端末20に設けられた一定の機能を管理する部分で、本発明の装置においては、依頼端末10の再印刷ユーティリティ11による再印刷要求を印刷制御部22に伝達する機能を持つ。印刷処理部22はスプール23を制御して印刷制御を実行するものである。スプール23は依頼端末10のページ境界処理部13から印刷用のデータを受け入れ、後で図6を用いて説明するようにしてページ境界識別子を格納し、スプールファイル

境界がない場合には、ステップS4に示すように、そのまま次の行に移る。そして、ステップS7において、最終行であると判断されるまで、ステップS2へステップS6の処理が繰り返される。最終行までサーチが終了すると、ステップS8に移り、LAN等の通信回線1を介して印刷制御端末20のスプール23に対し印刷用のデータが転送される。

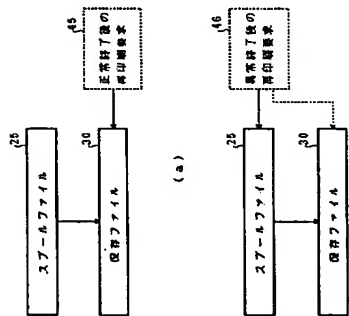
【0022】図6には、スプールの動作説明図を示す。まず、ステップS1において、ページ境界処理部13からスプール23が転送データを受信する。次に、ステップS2において、印刷用のデータに含まれる印刷データの属性をスプールファイル25の全体管理ファイル26に書き込む。そして、ステップS3において、データを1行ずつ解析する。その結果、ステップS4において、ページ境界識別子を抽出した場合には、ステップS5において、ページ管理ファイル27へページ情報を書き込む。その内容は図3に示した通りである。その後、ステップS6において次の行へ進み、ステップS7において最終行であると判断されるまで、ステップS3へステップS6の処理を繰り返す。こうして、印刷用のデータ中に含まれる全てのページ境界識別子を検出し、必要なページ情報をページ管理ファイル27に格納すると、ステップS8に移り、印刷データ全体をデータファイル28に格納する。

【0023】図7に、通常の場合の印刷処理フローチャートを示す。印刷制御端末20の印刷制御部22は、この図に示すような手順に従って印刷処理を実行する。まず、初めにステップS1において、全体管理ファイルから印刷データの属性を読み出す。そして、その内容に従ってスプールファイル25のデータファイル28からデータを呼び出し、プリンタ3に向けて出力する。その後、ステップS3において、印刷結果が正常と判断された場合に、ステップS4に移り、スプールファイル28からステップS4に保存する。そして、ステップS6において、依頼端末10に対し印刷が正常終了した旨を通信回線1を基にして通知する。依頼アプリケーション12はこの通知を受けて印刷終了を認識する。

【0024】一方、ステップS3において、印刷結果が異常と判断された場合にはステップS5に移り、異常終了した旨を依頼アプリケーション12へ通知する。なお、この実施例では、このフローチャートのように、正常終了した場合のみ、図1に示すスプールファイル25の内容を保存ファイル30に保存するようにしている。これは、異常終了した場合、印刷用のデータをスプールファイル25に保持した状態で依頼アプリケーション12の再印刷依頼等を得たためである。

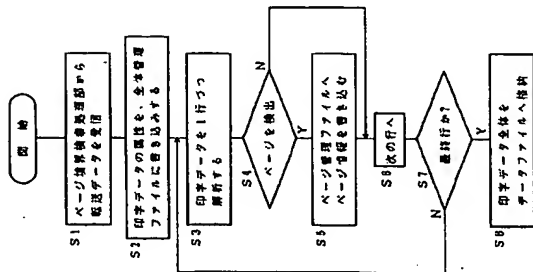
【0025】図8には、障害発生時の印刷処理動作フローチャートを示す。障害が発生した場合には、印刷処理部22はこの図に示すような手順で印刷処理を実行す

【図4】



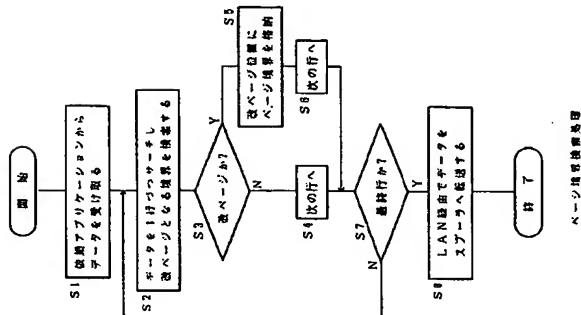
再印刷要求に対する処理フロー図

【図6】

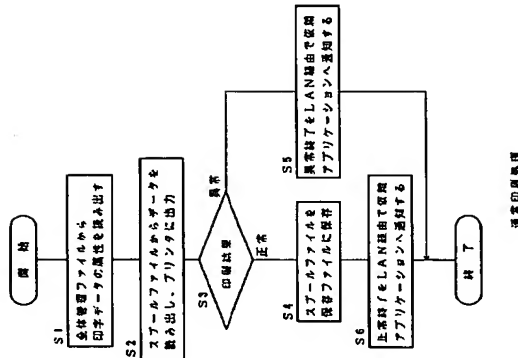


スプーラの動作

【図5】

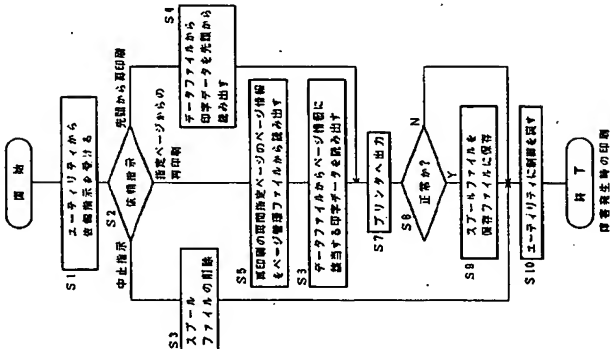


【図7】

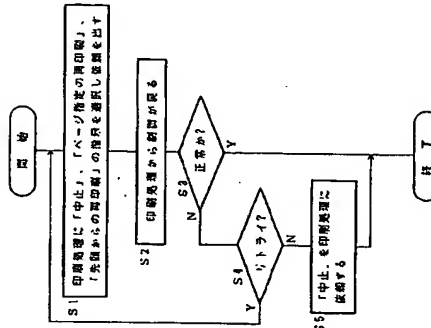


複製印刷部図

【図8】

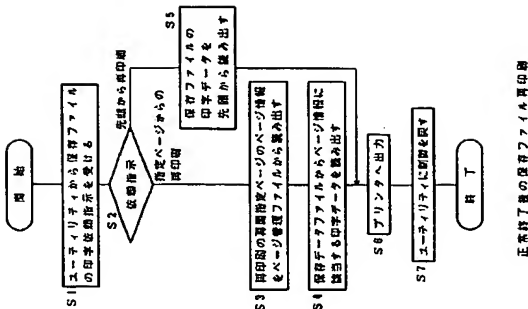


【図10】



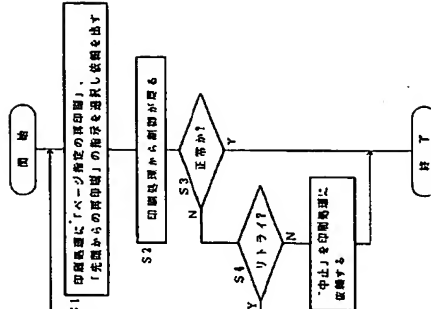
複製発生時の印刷制御

【図9】



正常終了後の保存ファイル再印刷

【図11】



正常終了後の保存ファイル再印刷